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The bacterial chromosome harbors a set of genes known as the *mar* operon, which is responsible for the *m*ultiple *a*ntibiotic *r*esistance phenotype. The *mar* operon is composed of a repressor, *marR,* and an activator, *marA*, which together govern the expression of genes encoding the efflux pump AcrAB-TolC in *Eschericia coli*. In addition, MarA modulates the expression levels of one of the largest regulons in *Escherichia coli*. The genetics of the *mar* phenotype has been uncovered in population studies. However the study of the single cell *mar* phenotype is important for understanding the emergence of multiple antibiotic resistance in bacteria. Using a fluorescent protein probe we monitor in real time the activity of the *mar* promoter in single *Escherichia coli* that grow as linear micro-colonies. This enables us to construct genealogies of real-time promoter activities across several generations. We determine the activity of the *mar* promoter for different values of the known inducer salicylate. We find that *mar* promoter activity levels display a wide heterogeneity of activity states across genetically identical daughter cells. Once established *mar* promoter activity states are maintained for several generations. The observed heterogeneity in expression levels is absent in a *ΔmarR* mutant strain.